GARDEN WATER USE
IN THE N-AQUIFER BASIN

Prepared for

The Navajo, Hopi and San Juan Southern Paiutes
in the Little Colorado River Basin

By

Northwest Economic Associates
13101 N.E. Highway 99, Suite 200
Vancouver, Washington 98686-2786

DRAFT REPORT
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Although both surveys were conducted to collect information for water rights within the Little Colorado Basin, the format used for the Hopi, Navajo and San Juan Southern Paiute surveys varied somewhat. The questions were tailored to best reflect the respective cultures of the each group. The results for each reservation are presented separately here. A separate set of questions addressed the larger fields; this information has been analyzed separately, but is not included in the following discussion of gardens.

HOPI GARDENS

Data from the Hopi survey was used to analyze current garden activities. As shown in Table 1, nearly 51 percent of the Hopis surveyed had garden plots. Garden participation varied with age of survey respondents. As might be expected, the two oldest age classes, which included people from age 61 to 71 and 71 plus, had lower participation rates (42 percent and 29 percent respectively) than the younger age groups. The other age class with low participation rates was the 21 to 25 year-old group.

The typical Hopi family grows a wide variety of vegetable and fruit crops in their garden plot. Table 2 shows the distribution of survey participants growing each type of vegetable. Corn, which is valued for both subsistence and ceremonial uses, is the most widely grown crop in the Hopi gardens[1]. Melon varieties are the second most commonly planted crops. Green beans, squash, tomatoes, chilies, and onions are also found in a large number of family garden plots.

Vegetables produced in the Hopi garden plots are used for family subsistence and for ceremonies, dances and feasts. Ninety-two percent of the survey respondents that had gardens said that their cultural activities (feasts, dances, ceremonies, religious activities) rely on crops grown in the gardens and/or fields. The different colored (white, blue, red) corn is especially important for ceremonial uses.

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1 Note that Table 2 reports the number of gardens planted with a particular crop and the percent of gardens with that crop. The percentages shown may not represent the acreage planted, e.g., the fact that 34 percent of the Hopi surveyed grow chili in their gardens does not mean that 34 percent of the garden acreage is planted with chili.

Table 1
Hopi Participation in Gardening by Age Class

Age Class	Number Gardening	Number not Gardening	Total for Sample	Percent Gardening
16 - 20	2	2	4	50%
21 - 25	1	2	3	33%
26 - 30	9	3	12	75%
31 - 35	14	7	21	67%
36 - 40	10	7	17	59%
41 - 50	18	15	33	55%
51 - 60	17	16	33	52%
61 - 70	11	15	26	42%
71 +	9	22	31	29%
Totals/Averages	**91**	**89**	**180**	**51%**

Source: NEA surveys, 1990 and 1991

Table 2
Crops Grown in Hopi Garden Plots

Crop	Number of Gardens w/Crop	Percent of Gardens w/Crop
Apples & Peaches	4	4%
Asparagus	1	1%
Cabbage	2	2%
Cantaloupes & Watermelons	38	42%
Carrots	10	11%
Chilies	31	34%
Corn	67	74%
Cucumbers	3	3%
Grapes	1	1%
Green Beans	33	36%
Onions	29	32%
Pinto Beans	16	18%
Potatoes	1	1%
Squash & Pumpkins	32	35%
Tomatoes	30	33%
Zucchini	4	4%
Misc. Crops	5	5%

Source: NEA surveys, 1990 and 1991

Nearly 100 percent of the survey participants said that the crops they raised in their gardens are for home use; less than 1 percent indicated that they sell any part of their garden output. Many of the survey participants mentioned the importance of giving away a share of their garden output. The crops grown both in the gardens and in the Hopi fields are also used for barter (in some cases in exchange with the Navajo for meat) and for payment for family debts, particularly wedding-related debts.

The Hopi gardens varied in size from less than a tenth of an acre to several acres with an overall average size of 0.79 acres[2]. Nearly 84 percent of the Hopi gardens are irrigated; the remaining 16 percent rely solely on rainwater. The garden irrigation water comes from a variety of sources including community water systems, individual wells, windmills, springs, and reservoirs. In a few cases, people hauled water from these sources to the garden plot.

Of the 84 percent that are irrigated, a majority (55 percent) of the gardens are watered from community water systems. The next most common water sources were springs and reservoirs which accounted for 38 percent of the irrigated gardens. Another 3 percent of the gardens were watered from other (non-community) wells. In the overall sample, only 1 percent said they used water from windmills for garden irrigation, although 14 percent of the irrigated gardens in the Mishongnovi sample used windmills.

In the NEA survey, Hopi members who said that they did not have a garden were asked the reason(s) why they didn't have one. Seventy-five percent of the respondents said lack of adequate water was a major factor in their decision not to garden. In some villages, residents were specifically asked by the community leaders not to use community water for gardens. In other areas, both availability of suitable land and lack of water were major constraints. Only about 18 percent of the people not involved in gardening indicated that they did not need a garden and/or were not interested in having a garden. Some of this group included people who were disabled or too elderly to tend a garden. However, many people in the elderly age group had family gardens in an earlier point in their life.

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2 Note that the larger irrigated Hopi fields at Moenkopi and Pasture Canyon are not included in this acreage mean. Those larger fields were tallied as "fields" in the survey.